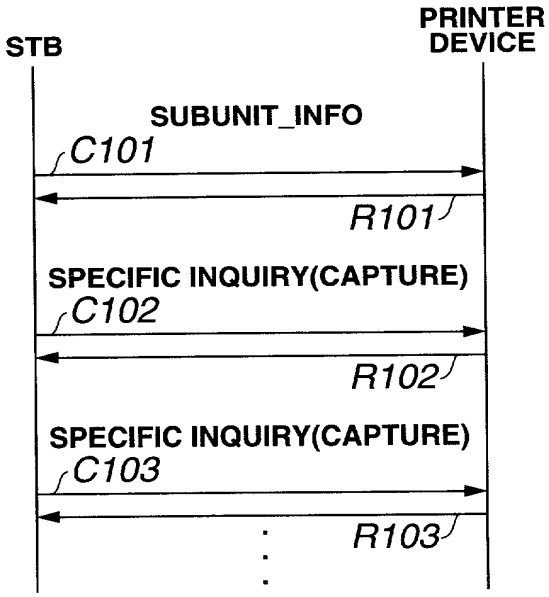
STB
PRINTER DEVICE
SUBUNIT_INFO
C101
R101
SPECIFIC INQUIRY(CAPTURE)
C102
R102
SPECIFIC INQUIRY(CAPTURE)
C103
R103

FIG.1

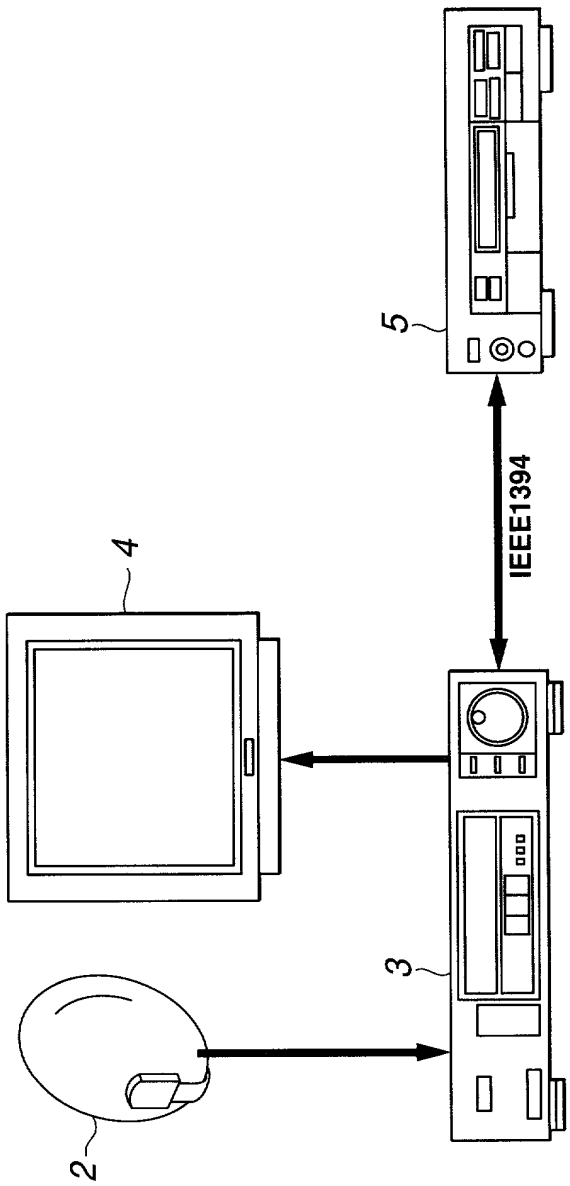

FIG.2

09890894 - 020501

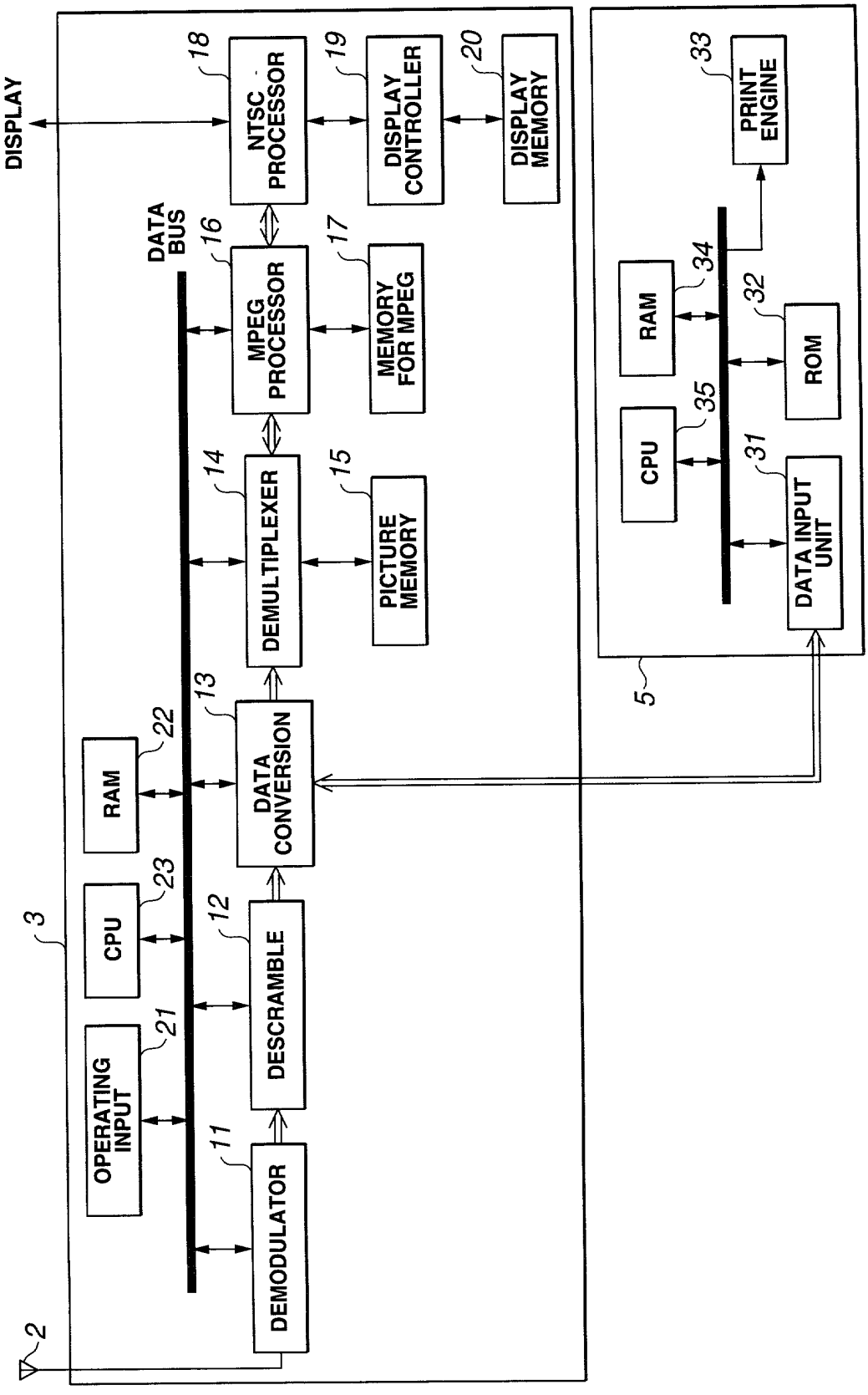
DISPLAY
NTSC PROCESSOR
DISPLAY CONTROLLER
DISPLAY MEMORY
DATA BUS
MPEG PROCESSOR
MEMORY FOR MPEG
DEMULTIPLEXER
PICTURE MEMORY
DATA CONVERSION
RAM
CPU
DESCRAMBLE
OPERATING INPUT
DEMODULATOR
PRINT ENGINE
RAM
ROM
CPU
DATA INPUT UNIT
18
19
20
16
17
14
15
13
22
23
12
21
11
33
34
32
35
31
3
2
5

FIG.3

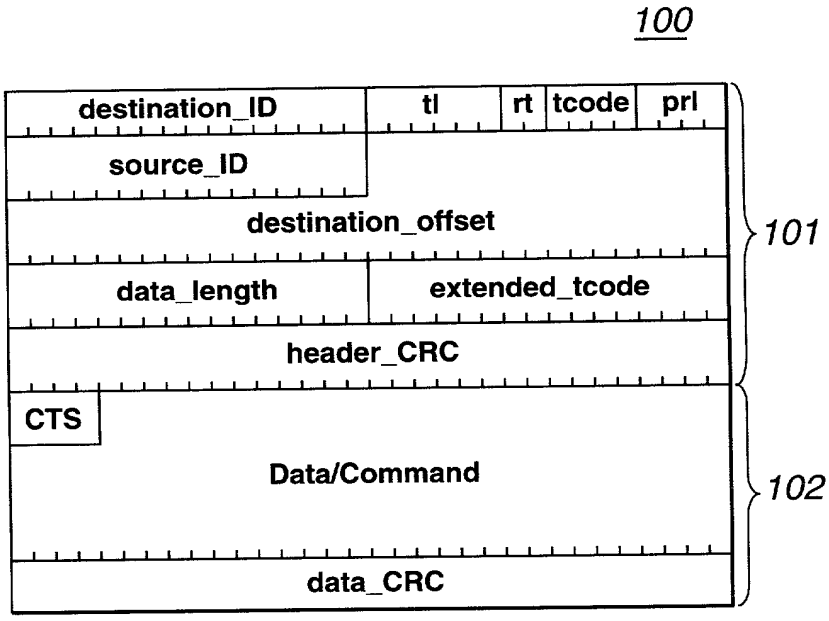
100
destination_ID
tl
rt
tcode
prl
source_ID
destination_offset
data_length
extended_tcode
header_CRC
101
CTS
Data/Command
data_CRC
102

FIG.4

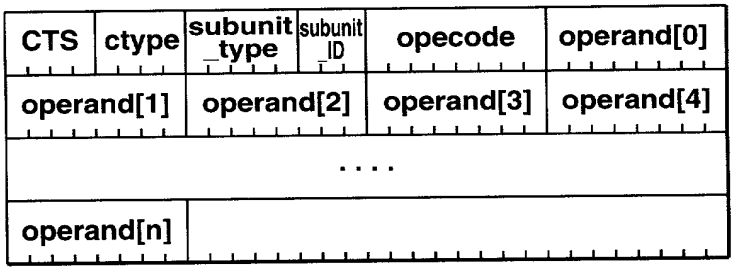
CTS
ctype
subunit _type
subunit ID
opecode
operand[0]
operand[1]
operand[2]
operand[3]
operand[4]
....
operand[n]

FIG.5

09890894.010502

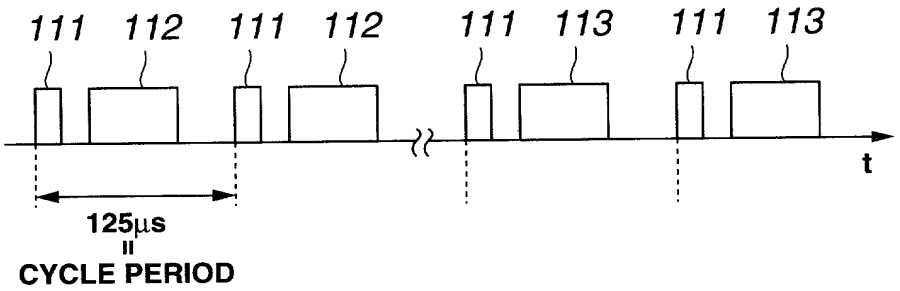

FIG.6

	pixel_x	pixel_y	interlaced/ progressive	pixel format	screen aspect ratio	pixel aspect ratio	based standard	image size
1080_422_16×9	1920	1080	interlaced/ progressive	YCbCr 4:2:2	16:9	1:1	ITU-R BT. 709-2	3.96MB
1080_420_16×9	1920	1080	interlaced/ progressive	YCbCr 4:2:0	16:9	1:1	ITU-R BT. 709-2	2.97MB
720_422_16×9	1280	720	progressive	YCbCr 4:2:2	16:9	1:1	ANSI/SMP TE 296 M-1997	1.76MB
720_420_16×9	1280	720	progressive	YCbCr 4:2:0	16:9	1:1	ANSI/SMP TE 296 M-1997	1.32MB
576_422_4×3	720	576	interlaced/ progressive	YCbCr 4:2:2	4:3	1.07:1	ITU-R BT.1203	810KB
576_420_4×3	720	576	interlaced/ progressive	YCbCr 4:2:0	4:3	1.07:1	ITU-R BT.1203	608KB
480_422_16×9	720	480	interlaced/ progressive	YCbCr 4:2:2	16:9	1.19:1	ITU-R BT. 709-2	675KB
480_420_16×9	720	480	interlaced/ progressive	YCbCr 4:2:0	16:9	1.19:1	ITU-R BT. 709-2	506KB
480_422_4×3	720	480	interlaced/ progressive	YCbCr 4:2:2	4:3	0.89:1	ITU-R BT.601-4	575KB
480_420_4×3	720	480	interlaced/ progressive	YCbCr 4:2:0	4:3	0.89:1	ITU-R BT.601-4	506KB

FIG.7

09890894 - 010501

	msb							lsb
opcode	VERSION(44_{16})							
operand [0]	reserved							
operand [1]	printer subunit version							
operand [2]	implementation profile id							
operand [3]	reserved							
operand [4]								

FIG.8

printer_subunit_version	Meaning
10_{16}	Version 1.0 of the printer subunit specification
all others	Reserved for future specification.

FIG.9

09890894 - 050600

implementation_profile_id	Meaning
00_{16}	Minimum
01_{16}	DSC
02_{16}	DTV
03_{16}	DSC&DTV

FIG.10

09890894 - 050201

2060TD ＊h6806860

	sRGB	YCC4:2:2 raw/chunky/ progressive	YCC4:2:0 raw/chunky/ progressive	Exit2.1	Unit Plug Defined(DV)	Unit Plug Defined (MPEG2-TS)
640×480	△○☆◎			☆◎		
720×480		○◎	○◎			
720×576		○◎	○◎			
800×600	☆◎			☆◎		
1024×768	☆◎			☆◎		
1280×960	☆◎			☆◎		
1280×720		○◎	○◎			
1600×1200						
1920×1080		○◎	○◎			

△ : Minimum ☆ : DSC ○ : DTV ◎ : DSC&DTV

FIG.11

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	msb							lsb
opcode	CAPTURE(42_{16})							
operand [0]	subfunction							
operand [1]	source_subunit_type						source_subunit_ID	
operand [2]	source_plug							
operand [3]	status							
operand [4]	dest_plug							
operand [5]	print_job_ID							
.								
.								
operand [16]								
operand [17]	data_size							
operand [18]								
operand [19]								
operand [20]								
operand [21]	image_size_x							
operand [22]								
operand [23]	image_size_y							
operand [24]								
operand [25]	image_format_specifier							
operand [26]								
operand [27]	reserved							
operand [28]								
operand [29]								
operand [30]	next_pic							
operand [31]	next_page							
operand [32]								

FIG.12

09890894 - 050199

Value	Symbol	Meaning
01_{16}	get	Get the current operation modes
02_{16}	get	Set the specified operation modes
03_{16}	query	Get the supported operation modes
Other values	–	Reserved

FIG.13

value	Type	Meaning
20_{16}	1080i _ 422chunky _ 16×9	
21_{16}	1080p _ 422chunky _ 16×9	
22_{16}	720p _ 422chunky _ 16×9	
23_{16}	480I _ 422chunky _ 16×9	
24_{16}	480p _ 422chunky _ 16×9	
25_{16}	480I _ 422chunky _ 4×3	
26_{16}	480p _ 422chunky _ 4×3	
28_{16}	1080i _ 422liner _ 16×9	
29_{16}	1080p _ 422liner _ 16×9	
$2A_{16}$	720p _ 422liner _ 16×9	
$2B_{16}$	480I _ 422liner _ 16×9	
$2C_{16}$	480p _ 422liner _ 16×9	
$2D_{16}$	480I _ 422liner _ 4×3	
$2E_{16}$	480p _ 422liner _ 4×3	
30_{16}	1080i _ 420planer _ 16×9	
31_{16}	1080p _ 420planer _ 16×9	
32_{16}	720p _ 420planer _ 16×9	
33_{16}	480I _ 420planer _ 16×9	
34_{16}	480p _ 420planer _ 16×9	
35_{16}	480I _ 420planer _ 4×3	
36_{16}	480p _ 420planer _ 4×3	
38_{16}	1080i _ 420liner _ 16×9	
39_{16}	1080p _ 420liner _ 16×9	
$3A_{16}$	720p _ 420liner _ 16×9	
$3B_{16}$	480I _ 420liner _ 16×9	
$3C_{16}$	480p _ 420liner _ 16×9	
$3D_{16}$	480I _ 420liner _ 4×3	
$3E_{16}$	480p _ 420liner _ 4×3	
60_{16}	Text(ASCII)	MD-clip ASCII
61_{16}	Text(ISO8859-1)	MD-clip modified ISO8859-1
62_{16}	Text(Music Shifted JIS)	MD-clip Music Shifted JIS

FIG.14

2060TO "h6806860

Value(MSB)	Value(LSB)	Type	Meaning
00_{16}			sRGB raw
	00_{16}	sRGB raw	
	01_{16}	sRGB raw,quadlet	
01_{16}			YCC raw
	$0X_{16}$	YCC4:2:2 raw/pixel	
	$1X_{16}$	YCC4:2:2 raw/line	
	$8X_{16}$	YCC4:2:0 raw/pixel	
	$9X_{16}$	YCC4:2:0 raw/line	
	$X0_{16}$	Pixel ratio 1.00×1.00 / ITU-R BT.709-2 / interlace	
	$X1_{16}$	Pixel ratio 1.19×1.00 / ITU-R BT.709-2 / interlace	
	$X2_{16}$	Pixel ratio 0.89×1.00 / ITU-R BT.709-2 / interlace	
	$X3_{16}$	Pixel ratio 0.89×1.00 / ITU-R BT.601-4 / interlace	
	$X4_{16}$	Pixel ratio 1.07×1.00 / ITU-R BT.1203 / interlace	
	$X8_{16}$	Pixel ratio 1.00×1.00 / ITU-R BT.709-2 / progressive	
	$X9_{16}$	Pixel ratio 1.19×1.00 / ITU-R BT.709-2 / progressive	
	XA_{16}	Pixel ratio 0.89×1.00 / ITU-R BT.709-2 / progressive	
	XB_{16}	Pixel ratio 0.89×1.00 / ITU-R BT.601-4 / progressive	
	XC_{16}	Pixel ratio 1.07×1.00 / ITU-R BT.1203 / progressive	
10_{16}			DCF Object
	00_{16}	Exif 2.1	
	01_{16}	JFIF	
	02_{16}	TIFF	
	$0F_{16}$	JPEG	
80_{16}~$8F_{16}$	00_{16}~FF_{16}	Vendor Dependent format	
FE_{16}			Special meaning
	00_{16}	Unit Plug defined	
	01_{16}	don't care	

FIG.15

6806860

$Y_1(L_1)$	$Y_2(L_1)$	$Cb_1(L_1)$	$Cr_1(L_1)$
$Y_3(L_1)$	$Y_4(L_1)$	$Cb_3(L_1)$	$Cr_3(L_1)$
		⋮	
$Y_{N-1}(L_1)$	$Y_N(L_1)$	$Cb_{N-1}(L_1)$	$Cr_{N-1}(L_1)$
$Y_1(L_2)$	$Y_2(L_2)$	$Cb_1(L_2)$	$Cr_1(L_2)$
		⋮	
$Y_{N-1}(L_M)$	$Y_N(L_M)$	$Cb_{N-1}(L_M)$	$Cr_{N-1}(L_M)$

FIG.16

$Y_1(L_1)$	$Y_2(L_1)$	$Y_1(L_2)$	$Y_2(L_2)$
$Cb_1(L_1)$	$Cr_1(L_1)$	$Y_3(L_1)$	$Y_4(L_1)$
$Y_3(L_2)$	$Y_4(L_2)$	$Cb_3(L_1)$	$Cr_3(L_1)$
		⋮	
$Y_{N-3}(L_{M-1})$	$Y_{N-2}(L_{M-1})$	$Y_{N-3}(L_M)$	$Y_{N-2}(L_M)$
$Cb_{N-3}(L_{M-1})$	$Cr_{N-3}(L_{M-1})$	$Y_{N-1}(L_{M-1})$	$Y_N(L_{M-1})$
$Y_{N-1}(L_M)$	$Y_N(L_M)$	$Cb_{N-1}(L_{M-1})$	$Cr_{N-1}(L_{M-1})$

FIG.17

$Y_1(L_1)$	$Y_2(L_1)$	$Y_3(L_1)$	$Y_4(L_1)$
		⋮	
$Y_{N-3}(L_1)$	$Y_{N-2}(L_1)$	$Y_{N-1}(L_1)$	$Y_N(L_1)$
$Cb_1(L_1)$	$Cr_1(L_1)$	$Cb_3(L_2)$	$Cr_3(L_1)$
		⋮	
$Cb_{N-3}(L_M)$	$Cr_{N-3}(L_1)$	$Cb_{N-1}(L_1)$	$Cr_{N-1}(L_1)$
$Y_1(L_2)$	$Y_2(L_2)$	$Y_3(L_1)$	$Y_4(L_1)$
		⋮	
$Cb_{N-3}(L_M)$	$Cr_{N-3}(L_M)$	$Cb_{N-1}(L_M)$	$Cr_{N-1}(L_M)$

FIG.18

$Y_1(L_1)$	$Y_2(L_1)$	$Y_3(L_1)$	$Y_4(L_1)$
		⋮	
$Y_{N-3}(L_1)$	$Y_{N-2}(L_1)$	$Y_{N-1}(L_1)$	$Y_N(L_1)$
$Y_1(L_2)$	$Y_2(L_2)$	$Y_3(L_2)$	$Y_4(L_2)$
		⋮	
$Y_{N-3}(L_2)$	$Y_{N-2}(L_2)$	$Y_{N-1}(L_2)$	$Y_N(L_2)$
$Cb_1(L_1)$	$Cr_1(L_1)$	$Cb_3(L_1)$	$Cr_3(L_1)$
		⋮	
$Cb_{N-3}(L_1)$	$Cr_{N-3}(L_1)$	$Cb_{N-1}(L_1)$	$Cr_{N-1}(L_1)$
$Y_1(L_3)$	$Y_2(L_3)$	$Y_3(L_3)$	$Y_4(L_3)$
		⋮	
$Cb_{N-3}(L_{M-1})$	$Cr_{N-3}(L_{M-1})$	$Cb_{N-1}(L_{M-1})$	$Cr_{N-1}(L_{M-1})$

FIG.19

Address Offset	1st byte	2nd byte	3rd byte	4th byte
$00\ 00\ 00\ 00_{16}$	Y1(L1)	Y2(L1)	Cb1(L1)	Cr1(L1)
$00\ 00\ 00\ 04_{16}$	Y3(L1)	Y4(L1)	Cb3(L1)	Cr3(L1)
⋮	⋮		⋮	
$00\ 00\ 05\ 9C_{16}$	Y719(L1)	Y720(L1)	Cb719(L1)	Cr719(L1)
$00\ 00\ 05\ A0_{16}$	Y1(L2)	Y2(L2)	Cb1(L2)	Cr1(L2)
⋮	⋮		⋮	
$00\ 0A\ 8B\ FC_{16}$	Y719(L480)	Y720(L480)	Cb719(L480)	Cr719(L480)

FIG.20

09890894 041501

Address Offset	1st byte	2nd byte	3rd byte	4th byte
00 00 00 00_{16}	Y1(L1)	Y2(L1)	Y1(L2)	Y2(L2)
00 00 00 04_{16}	Cr1(L1)	Cr1(L1)	Y3(L1)	Y4(L1)
00 00 00 08_{16}	Y3(L2)	Y4(L2)	Cb3(L1)	Cr3(L1)
⋮		⋮		
00 07 E8 $F8_{16}$	Cb717(L479)	Cr717(L479)	Y719(L479)	Y720(L479)
00 07 E8 FC_{16}	Y719(L480)	Y720(L480)	Cb719(L479)	Cr719(L479)

FIG.21

Address Offset	1st byte	2nd byte	3rd byte	4th byte
$00\ 00\ 00\ 00_{16}$	Y1(L1)	Y2(L1)	Y3(L1)	Y4(L1)
⋮	⋮			
$00\ 00\ 02\ CF_{16}$	Y717(L1)	Y718(L1)	Y719(L1)	Y720(L1)
$00\ 00\ 02\ D0_{16}$	Cb1(L1)	Cr1(L1)	Cb3(L1)	Cr3(L1)
⋮	⋮			
$00\ 00\ 05\ 9F_{16}$	Cb717(L1)	Cr717(L1)	Cb719(L1)	Cr719W(L1)
$00\ 00\ 05\ A0_{16}$	Y1(L2)	Y2(L2)	Y3(L2)	Y4(L2)
⋮	⋮			
$00\ 0A\ 8B\ FC_{16}$	Cb717(L480)	Cr717(L480)	Cb719(L480)	Cr719(L480)

FIG.22

Address Offset	1^{at}byte	2ndbyte	3rdbyte	4thbyte
00 00 00 00$_{16}$	Y1(L1)	Y2(L1)	Y3(L1)	Y4(L1)
⋮	⋮		⋮	
00 00 02 CF$_{16}$	Y717(L1)	Y718(L1)	Y719(L1)	Y720(L1)
00 00 02 D0$_{16}$	Y1(L2)	Y2(L2)	Y3(L2)	Y4(L2)
⋮	⋮		⋮	
00 00 05 9F$_{16}$	Y717(L2)	Y718(L2)	Y719(L2)	Y720(L2)
00 00 05 A0$_{16}$	Cb1(L1)	Cr1(L1)	Cb3(L1)	Cr3(L1)
⋮	⋮		⋮	
00 00 08 6F$_{16}$	Cb717(L1)	Cr717(L1)	Cb719(L1)	Cr719(L1)
00 00 08 70$_{16}$	Y1(L3)	Y2(L3)	Y3(L3)	Y4(L3)
⋮	⋮		⋮	
00 07 E8 FC$_{16}$	Cb717(L479)	Cr717(L479)	Cb719(L479)	Cr719(L479)

FIG.23

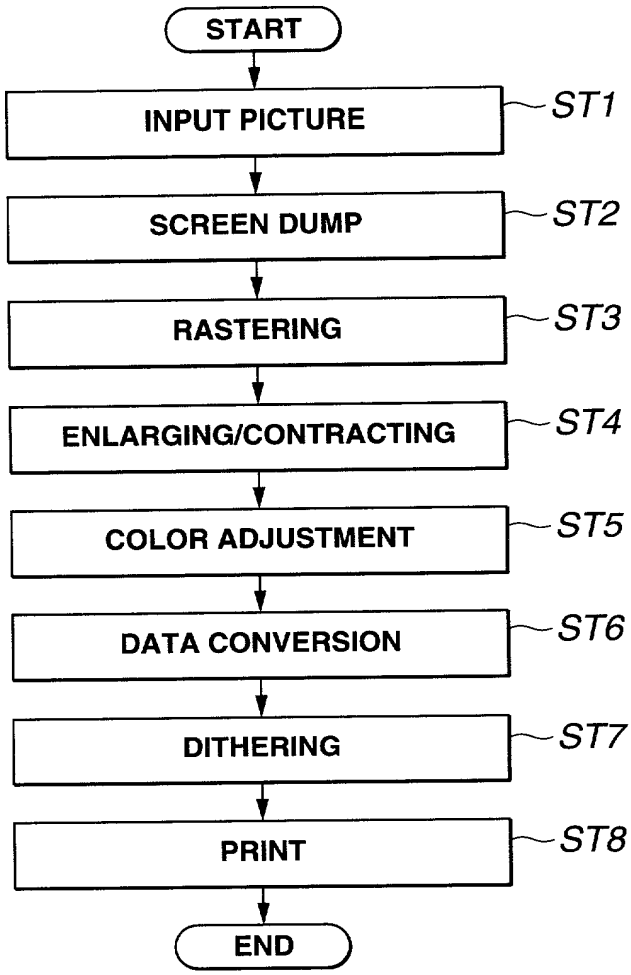

FIG.24

09890894 - 050902

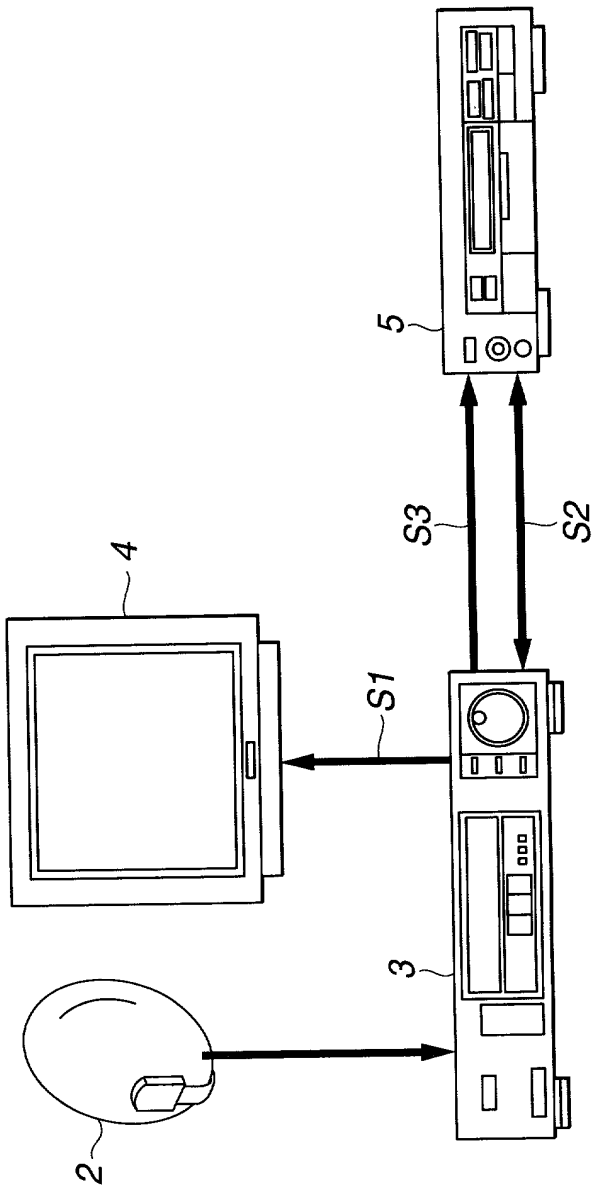

FIG.25

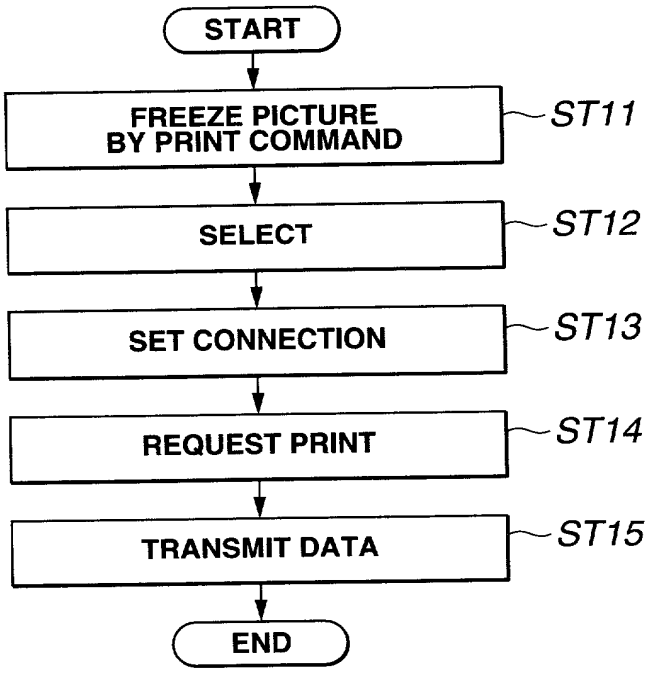

FIG.26

09/890894 - 10/26/2005 - 10:26:26 AM

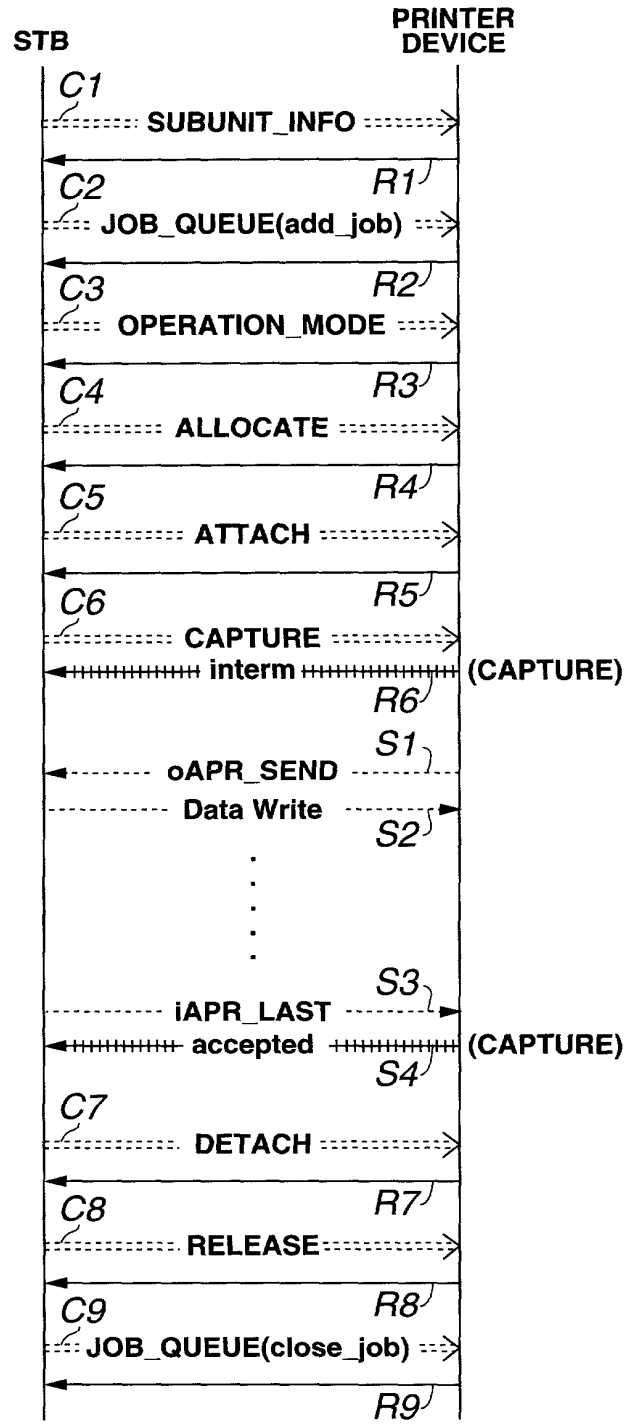
STB
PRINTER DEVICE
C1
SUBUNIT_INFO
C2
R1
JOB_QUEUE(add_job)
C3
R2
OPERATION_MODE
C4
R3
ALLOCATE
C5
R4
ATTACH
C6
R5
CAPTURE
interm
(CAPTURE)
R6
S1
oAPR_SEND
Data Write
S2
S3
iAPR_LAST
accepted
(CAPTURE)
S4
C7
DETACH
C8
R7
RELEASE
C9
R8
JOB_QUEUE(close_job)
R9

FIG.27